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FLOOD INSURANCE STUDY

ORIGINAL

CITY OF FAIRVIEW, OREGON
MULTNOMAH COUNTY

SEPTEMBER 30, 1987

Federal Emergency Management Agency

COMMUNITY NUMBER - 410180

24

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NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for flood plain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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FLOOD INSURANCE STUDY

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the City of Fairview, Multnomah County, Oregon, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound flood plain management. Minimum flood plain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Corps of Engineers (COE), Portland District, for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-E-1153, Project Order No. 1, Amendment No. 21. This study was completed in May 1985.

Hydrologic analyses within the Multnomah County Drainage District No. 1 were studied for a July 1984 report entitled Multnomah Drainage District No. 1 Hydrology Study (Reference 1).

1.3 Coordination

The study contractor maintained precontract coordination by telephone in September 1982 with city officials and representatives of FEMA. The purpose of the coordination was to inform the city of its status in the NFIP, to gather all available pertinent data on flooding in the community, and to reach an agreement on the areas to be studied. Also discussed were flood hazards and possible locations of high-water marks.

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An intermediate coordination meeting was held on May 28, 1985, and was attended by representatives of FEMA, the city, and the study contractor. Preliminary results of the study contractor were presented at that meeting.

On September 3, 1986, the results of the study were discussed at the final community coordination meeting, which was attended by representatives of FEMA, the study contractor, and the community. All significant problems raised at that meeting have been addressed in this study.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated areas of the City of Fairview, Multnomah County, Oregon. The area of study is shown on the Vicinity Map (Figure 1).

Flooding from Fairview Creek and ponding within the Multnomah Drainage District No. 1 were studied using detailed methods.

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through May 1990.

Unnamed Tributary, to the east of Fairview Creek, and a levee-protected area along the Columbia River were studied using approximate methods.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the City of Fairview.

2.2 Community Description

Fairview is located along the southern banks of the Columbia River, 10 miles due east of downtown Portland, in north-central Multnomah County, in northwestern Oregon.

Fairview is bordered by the City of Gresham to the south and the City of Wood Village to the east. To the southeast, and in the remaining surrounding areas, Fairview is bordered by unincorporated areas of Multnomah County.

Fairview was incorporated in 1908 and is primarily a residential community. Local employment is limited to shops and businesses that serve area residents. Employment for the majority of Fairview residents is elsewhere in the Portland metropolitan area (Reference 2).

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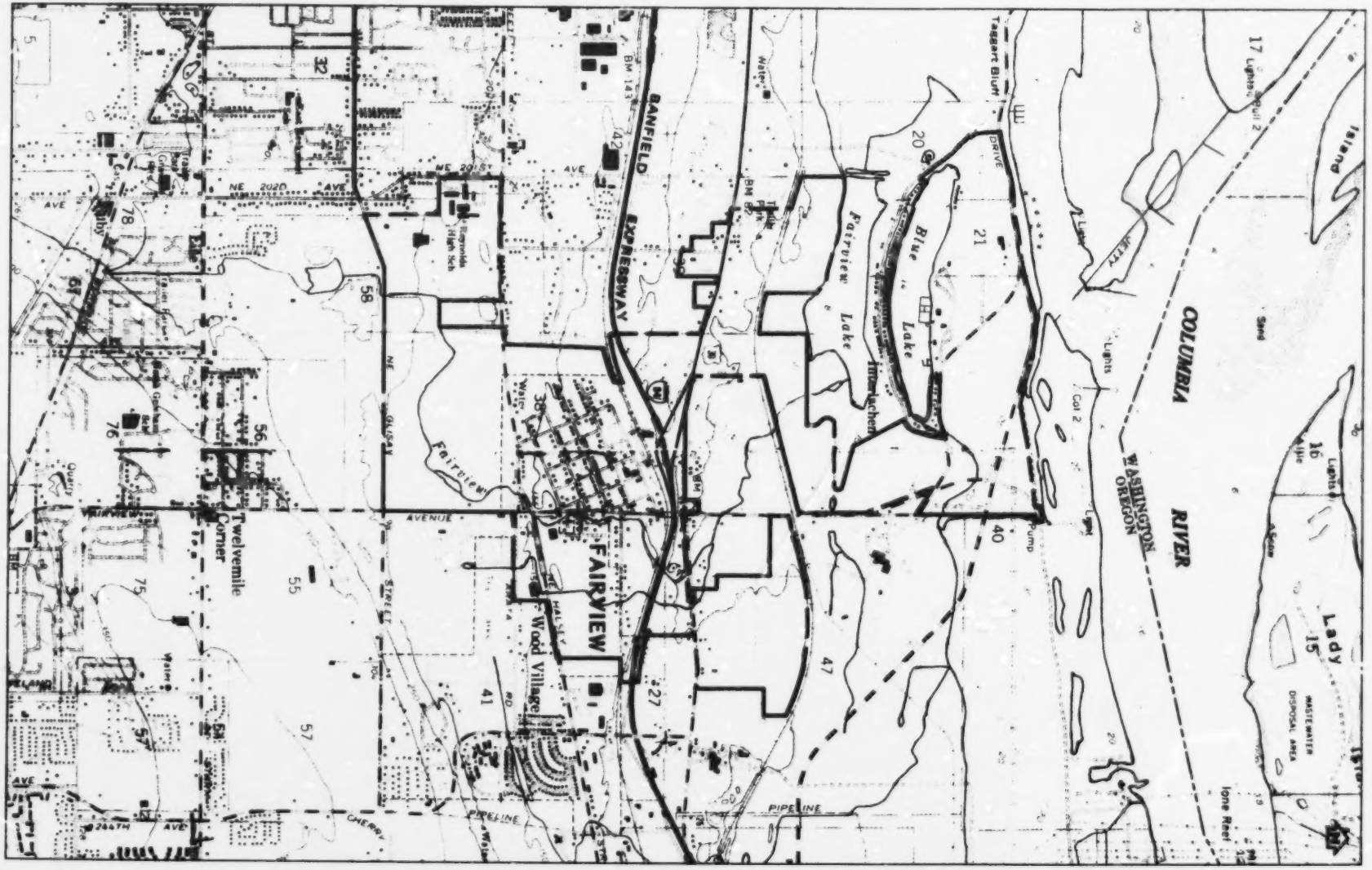
BANFIELD EXPRESSWAY
COLUMBIA RIVER
FAIRVIEW
Fairview Lake
Blue Lake
Wood Village
Twelvemile Corner
Lady Island
Sand Island
Taggart Bluff
NE 201ST AVE
NE 2020 AVE
NE GLISAN
FAIRVIEW AVENUE
STARK ST
HALSEY RD
PIPELINE
SW 244TH AVE
CHERRY
Reynolds High Sch
Interchange
Lights
Jetty
Pump
Sand
Lights
Col 2
Lights
Lights
Col 2
WASHINGTON
OREGON
Ione Reef
WASTEWATER DISPOSAL AREA
Water
Water
Water

The population of the city was 1,045 in 1970 and 1,749 in 1983; no significant growth has been experienced in the last 5 years (Reference 3). A quiet community, Fairview has remained relatively unchanged in the past 10 years.

The climate of Fairview is characterized by mild, wet winters and dry, warm summers. The average annual precipitation for the area is 45 inches (Reference 4). Average temperatures range from 38°F in January to 68°F in July.

The surrounding area ranges from a busy metropolis west of the city to picturesque rural land to the south and east. The Columbia River lies to the north of the city. The area provides a wide choice of recreational opportunities, from fishing and backpacking to kite flying in the westerly winds that blow in from the Pacific Ocean.

Fairview Creek flows northerly from its source near Grants Butte, through Gresham and Fairview, and empties into Fairview Lake near the Columbia River. It drains rolling pastureland mixed with residential subdivisions. South of Fairview, Fairview Creek slopes gently as it passes through a thickly wooded area.

Multnomah County Drainage District No. 2 fronts the Columbia River approximately between 20th Avenue and Fairview Avenue. There is both agricultural and industrial development in its flood plain (Reference 3).

2.3 Principal Flood Problems

The main concern is the flooding of Fairview Creek in the downtown Fairview area. The principal cause of flooding on Fairview Creek is runoff from winter rainstorms.

Because Fairview is located at the lowest elevation in the Fairview Creek drainage basin, flood problems within the city will be influenced by any upstream development unless proper storm water retention facilities are constructed.

2.4 Flood Protection Measures

Flood protection measures consist primarily of minor channelization. The National Weather Service in Portland, Oregon, is responsible for flood-warning and river-forecasting services in Multnomah County. General weather forecasts are also available. No flood-control structures have been built on Fairview Creek or on Unnamed Tributary east of Fairview Creek (Reference 3).

Nonstructural measures (a comprehensive land use plan, a zoning ordinance, and building permits) are being used to aid in the prevention of future flood damage. Zoning Ordinance No. 9-1974,

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enacted on November 10, 1974, follows Federal guidelines for controlling development within the 100-year flood plain. The City requires building permits, and it reviews those permits for compliance with the provisions of the zoning ordinance to ensure that sites are reasonably safe from flooding. The Comprehensive Land Use Plan was approved by the Oregon Land Conservation and Development Commission on July 10, 1980.

The drainage districts along the Columbia River in Multnomah County have levees of varying flood protection capabilities. Thus, safe water levels have been established by the COE (Reference 4). The safe water level is the highest flood elevation, considering surveillance and minor remedial work, for which reasonable assurance can be given that a levee system will not fail. The criteria used to evaluate protection from the 100-year flood are: (1) adequate design, including freeboard; (2) structural stability, and (3) proper operation and maintenance. Levees that do not provide 100-year flood protection are not considered in the hydraulic analysis of the 100-year flood plain. Multnomah Drainage District No. 1, with proper surveillance and maintenance, is expected to withstand a 500-year flood. Although the perimeter levee of a particular drainage district may be capable of withstanding large floods, major rainstorms could cause extensive interior ponding in low areas if runoff exceeds the capacity of the dewatering-drainage pumps (Reference 3).

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

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3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the community.

There are no stream gage stations on Fairview Creek. Discharges for Fairview Creek were determined by correlations with stream discharge-frequency relationships for Beaver and Johnson Creeks.

Discharges for Unnamed Tributary to Fairview Creek were developed by the regional analysis presented in U.S. Geological Survey Open-File Report 79-553, Magnitude and Frequency of Floods in Western Oregon (Reference 5). Those discharges were modified based on culvert capacity and overflow computations.

Peak discharge-drainage area relationships for Fairview Creek are shown in Table 1.

The rate and volume of runoff for the 100-year flood within Multnomah County Drainage District No. 1 were determined using the Environmental Protection Agency Stormwater Management Model (Reference 6). The model calculates the rate of runoff at specific time intervals throughout a storm based on characteristics of rainfall and the physical characteristics of the drainage basin. The computed runoff draining into Columbia Slough was then balanced against the ability of the drainage district pumps to discharge water from the slough. The volume of runoff draining to the slough that exceeded district pumping capabilities was calculated at specific time intervals throughout the storm. The peak water-surface elevation for the 100-year storm was then determined using the volume of storage at various elevations in the slough (Reference 1).

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Hydraulic analyses were performed using the COE HEC-2 step-backwater computer program (Reference 7).

Cross sections for Fairview Creek were taken from a composite of channel data obtained from COE field surveys and overbank data taken from topographic maps (References 8 and 9). All bridges and culverts were field checked to obtain elevation data and structural geometry.

Due to limitations of map scale, stream distances as depicted on the flood profiles may not always match those depicted on the maps.

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Table 1. Summary of Discharges

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cubic feet per second) 10-Year	5-Year	100-Year	500-Year
Fairview Creek					
At Mouth	5.5	230	370	440	630
At Sandy Boulevard	4.8	200	320	385	550
At Banfield Expressway	4.4	185	295	350	505
At Northeast Halsey Street	4.3	180	290	345	495
At Northeast Glisan Street	3.4	145	230	270	390

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Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Insurance Rate Map (Exhibit 2).

Roughness values (Manning's "n") for the channel and overbanks of Fairview Creek were first estimated from field observation and were then modified using engineering judgment and information obtained from previous floods. The roughness values for Fairview Creek ranged from 0.05 to 0.095 for the channel and from 0.09 to 0.15 for the overbanks.

Starting water-surface elevations for Fairview Creek were based on normal-depth calculations.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Water-surface elevations within Multnomah County Drainage District No. 1 are based on a July 1984 hydrology study (Reference 1).

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps; the descriptions of the marks are presented in Elevation Reference Marks (Exhibit 3).

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500-year flood plain boundaries and 100-year floodway to assist communities in developing flood plain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:2,400, with a contour interval of 2 feet (Reference 8).

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Boundaries for the shallow flooding areas were delineated using topographic maps at a scale of 1:2,400, with a contour interval of 2 feet (Reference 8), in conjunction with the previously estimated elevations.

The 100- and 500-year flood plain boundaries are shown on the Flood Insurance Rate Map (Exhibit 2). On this map, the 100-year flood plain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, and AH), and the 500-year flood plain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 100- and 500-year flood plain boundaries are close together, only the 100-year flood plain boundary has been shown. Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 100-year flood plain boundary is shown on the Flood Insurance Rate Map (Exhibit 2).

4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed for certain stream segments on the basis of equal conveyance reduction from each side of the flood plain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 2). The computed floodways are shown on the Flood Insurance Rate Map (Exhibit 2). In cases where the floodway and 100-year flood plain boundaries are either close together or collinear, only the floodway boundary is shown.

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Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance	Width (Feet)	Square Feet Section Area	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Fairview Creek								
A	6,860	25	52	6.7	110.9	110.9	111.1	0.2
B	6,960	6	48	7.3	126.0	126.0	126.2	0.2
C	7,125	33	170	2.1	127.6	127.6	127.8	0.2
D	7,248	39	71	5.0	128.0	128.0	128.1	0.1
E	7,465	50	153	2.3	129.1	129.1	129.2	0.1
F	7,680	33	87	4.0	130.8	130.8	131.1	0.3
G	7,805	9	45	7.8	138.2	138.2	139.2	1.0
H	8,032	30	71	4.9	147.2	147.2	147.4	0.2
I	8,165	50	227	1.5	147.8	147.8	148.3	0.5
J	8,335	45	168	2.1	148.0	148.0	148.5	0.5
K	8,685	30	95	3.7	149.0	149.0	149.4	0.4
L	8,837	37	74	4.7	155.5	155.5	155.8	0.3
M	8,892	56	369	1.0	156.0	156.0	156.4	0.4
N	9,027	55	128	2.8	156.1	156.1	156.6	0.5
O	9,197	65	138	2.5	156.3	156.3	157.2	0.9
P	9,227	70	157	2.2	156.8	156.8	157.8	1.0
Q	9,617	27	68	5.1	159.2	159.2	159.2	0.0
R	10,237	48	132	2.6	166.1	166.1	166.1	0.0
S	10,287	50	107	3.2	172.9	172.9	173.4	0.5
T	10,602	50	233	1.5	173.6	173.6	174.0	0.4
U	11,152	35	59	5.8	176.5	176.5	176.5	0.0
V	11,562	63	128	2.5	184.6	184.6	184.7	0.1
W	12,360	30	102	3.1	189.8	189.8	190.7	0.9
X	13,630	75	216	1.5	194.7	194.7	195.7	1.0
Y	14,610	80	148	2.2	197.7	197.7	198.5	0.8
Z	15,940	45	71	4.5	208.4	208.4	208.4	0.0

The area between the floodway and 100-year flood plain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

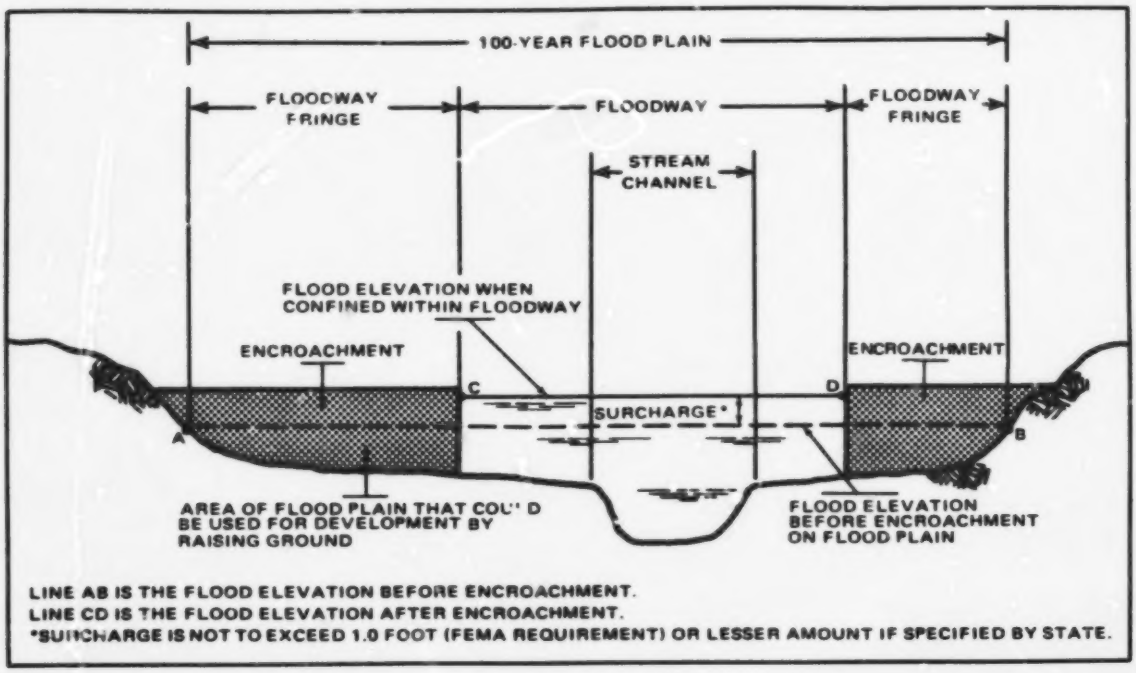
100-YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COU' D BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE AB IS THE FLOOD ELEVATION BEFORE ENCROACHMENT.
LINE CD IS THE FLOOD ELEVATION AFTER ENCROACHMENT.
*SURCHARGE IS NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

Figure 2. Floodway Schematic

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year flood plains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown this zone.

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Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year flood plains that are determined in the Flood Insurance Study by detailed methods. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year flood plain, areas within the 500-year flood plain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and flood plain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year flood plains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For flood plain management applications, the map shows by tints, screens, and symbols, the 100- and 500-year flood plains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

7.0 OTHER STUDIES

A 1979 COE flood hazard study for Fairview Creek contained water-surface profiles, floodway and flood plain area delineations, and a plan-profile sheet (Reference 10). That information was used in this study.

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A Flood Hazard Boundary Map has been published for the City of Fairview (Reference 11); however, this study presents a more detailed analysis.

Flood Insurance Studies prepared for the unincorporated areas of Multnomah County and the City of Gresham (References 3 and 12, respectively) are in agreement with this study.

A Flood Hazard Boundary Map has been published for the City of Wood Village (Reference 13). Because this Flood Insurance Study uses a more up-to-date analysis, it supersedes that map at the corporate limits.

The City of Portland, Multnomah County Drainage District No. 1, and Port of Portland published Multnomah Drainage District No. 1 Hydrology Study in July 1984 (Reference 1). That report was used to lower the 100-year flood elevations within the district.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, Federal Regional Center, 130 228th Street, SW., Bothell, Washington 98021-9796.

9.0 BIBLIOGRAPHY AND REFERENCES

1. Multnomah County Drainage District No. 1, City of Portland, and Port of Portland, Multnomah Drainage District No. 1 Hydrology Study, prepared by Kramer, Chin & Mayo, Inc., July 1984

2. City of Fairview, Letter from City Recorder, Dec. 27, 1983

3. Federal Emergency Management Agency, Flood Insurance Study, Multnomah County, Oregon (Unincorporated Areas), Revised March 18, 1986

4. U.S. Department of the Army, Corps of Engineers, Portland District, Drainage District Condition Study on Safe Water Surface Levels, May 1978

5. U.S. Department of the Interior, Geological Survey, Open-File Report 79-553, Magnitude and Frequency of Floods in Western Oregon, 1979

6. U.S. Environmental Protection Agency, Stormwater Management Model, Users Manual, Version 3, 1982

7. U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water-Surface Profiles, Generalized Computer Program, Davis, California, November 1976, Updated May 1984

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8. Multnomah County, Planimetric Topographic Maps, Scale 1:2,400, Contour Interval 2 feet, 1968

9. U.S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Map, Scale 1:24,000, Contour Interval 10 feet: Camas, Washington-Oregon (1961), Photorevised (1970, 1975)

10. U.S. Department of the Army, Corps of Engineers, Portland District, Flood Plain Information, Fairview Creek, Fairview, Oregon, March 1979

11. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, City of Fairview, Oregon, Scale 1:12,000, February 21, 1975

12. Federal Emergency Management Agency, Flood Insurance Study, City of Gresham, Oregon, Revised June 17, 1986

13. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, City of Wood Village, Oregon, Scale 1:9,600, Revised October 31, 1975

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Exhibit 3 - Elevation Reference Marks

REFERENCE MARK	FIRM PANEL	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
RM1	0001	79.69	At intersection of Sandy Boulevard and Fairview Avenue (Multnomah County, #W-33).
RM2	0001	124.82	Monument case rim El. 126.03 (#W-34), at intersection of Bridge Street and Fairview Avenue (Multnomah County)
RM3	0001	154.57	Case rim El. 154.93 (#W-35), at intersection of Northeast Halsey Street and Fairview Avenue (Multnomah County)
RM4	0001	197.48	Monument case rim El. 198.39 (#W-36), at intersection of Northeast Glisan Street and Fairview Avenue (Multnomah County)

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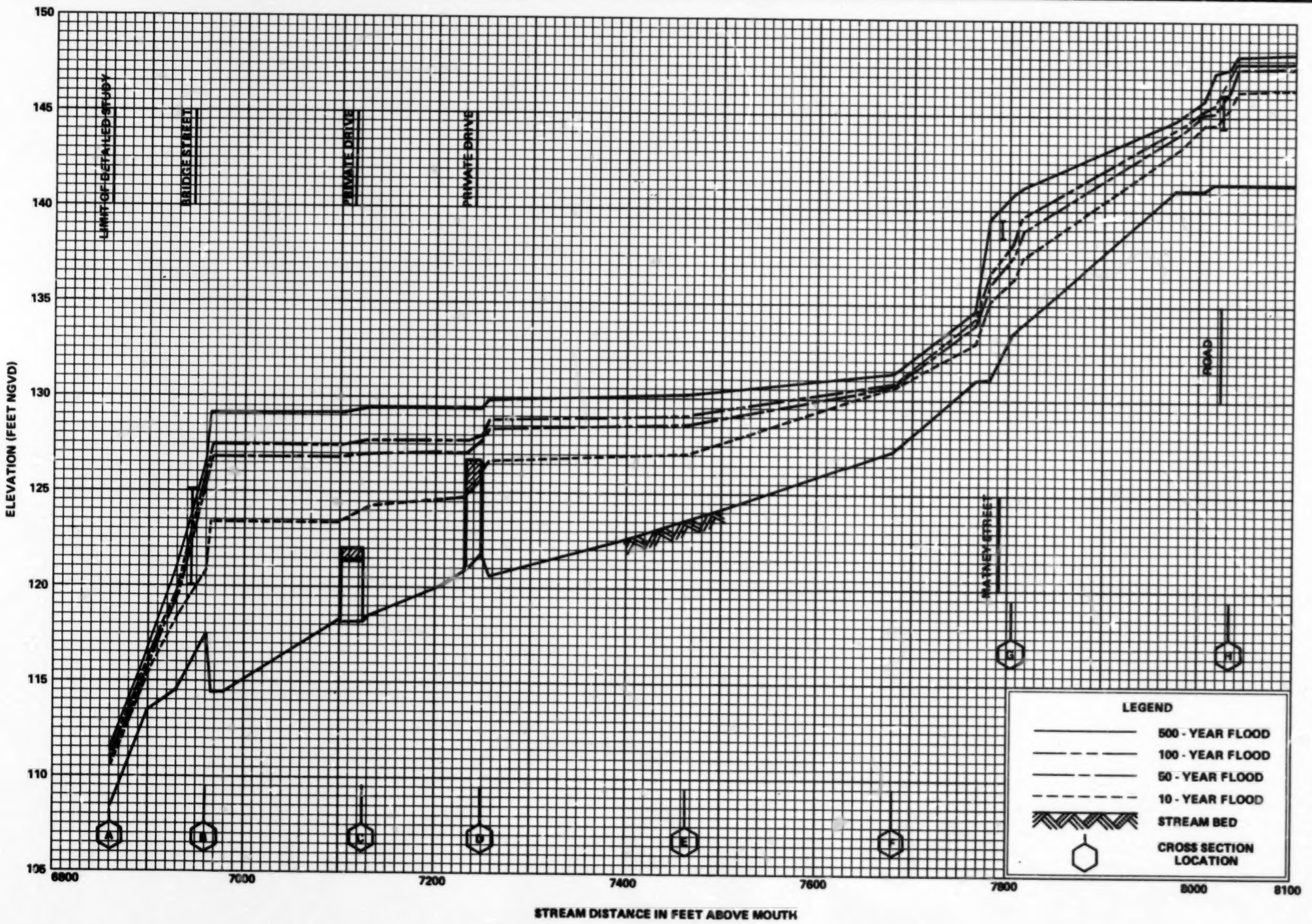

FLOOD PROFILES

FAIRVIEW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF FAIRVIEW, OR
(MULTNOMAH CO.)

01P

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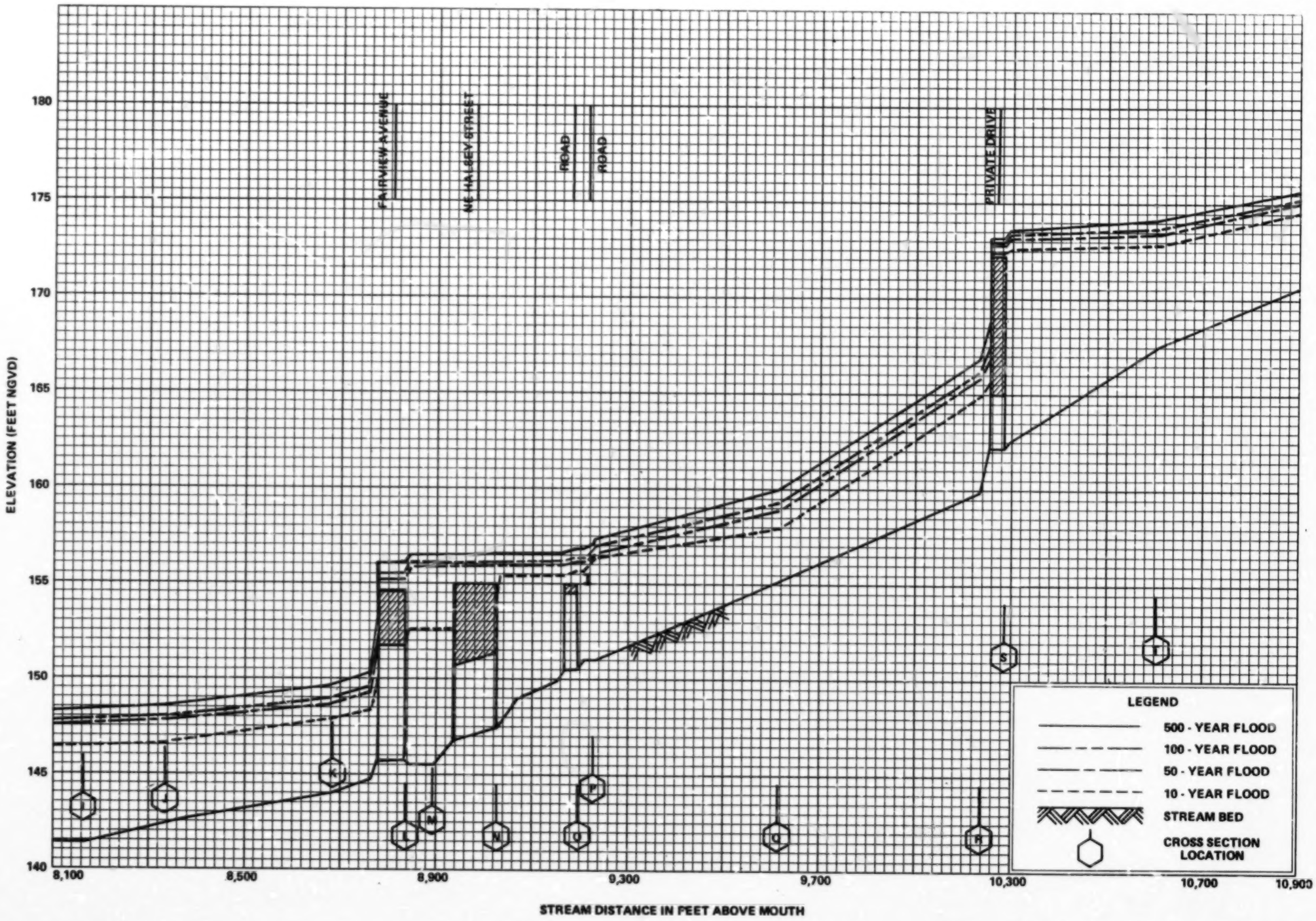

FLOOD PROFILES

FAIRVIEW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF FAIRVIEW, OR
(MULTNOMAH CO.)

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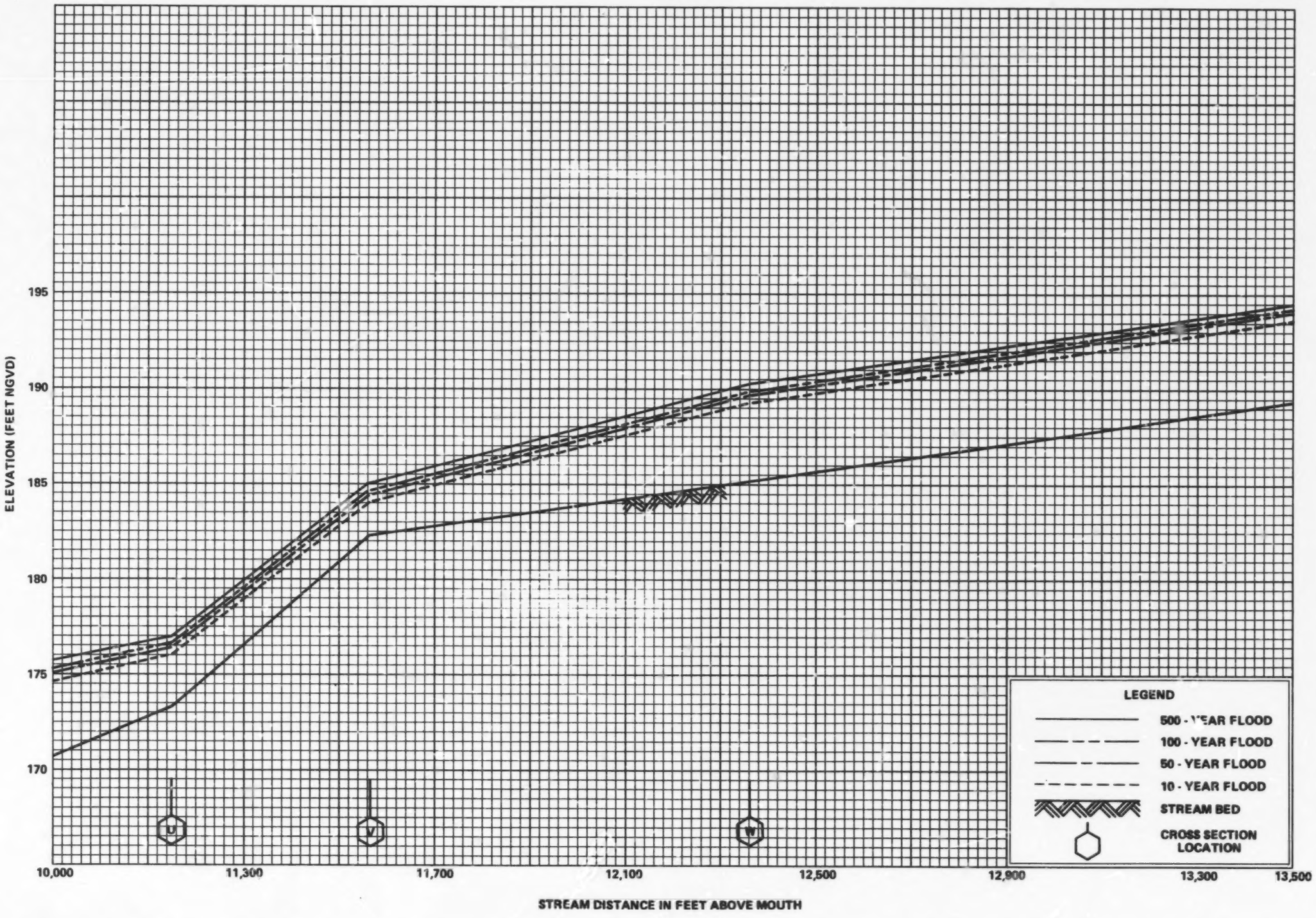

FLOOD PROFILES

FAIRVIEW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF FAIRVIEW, OR
(MULTNOMAH CO.)

03P

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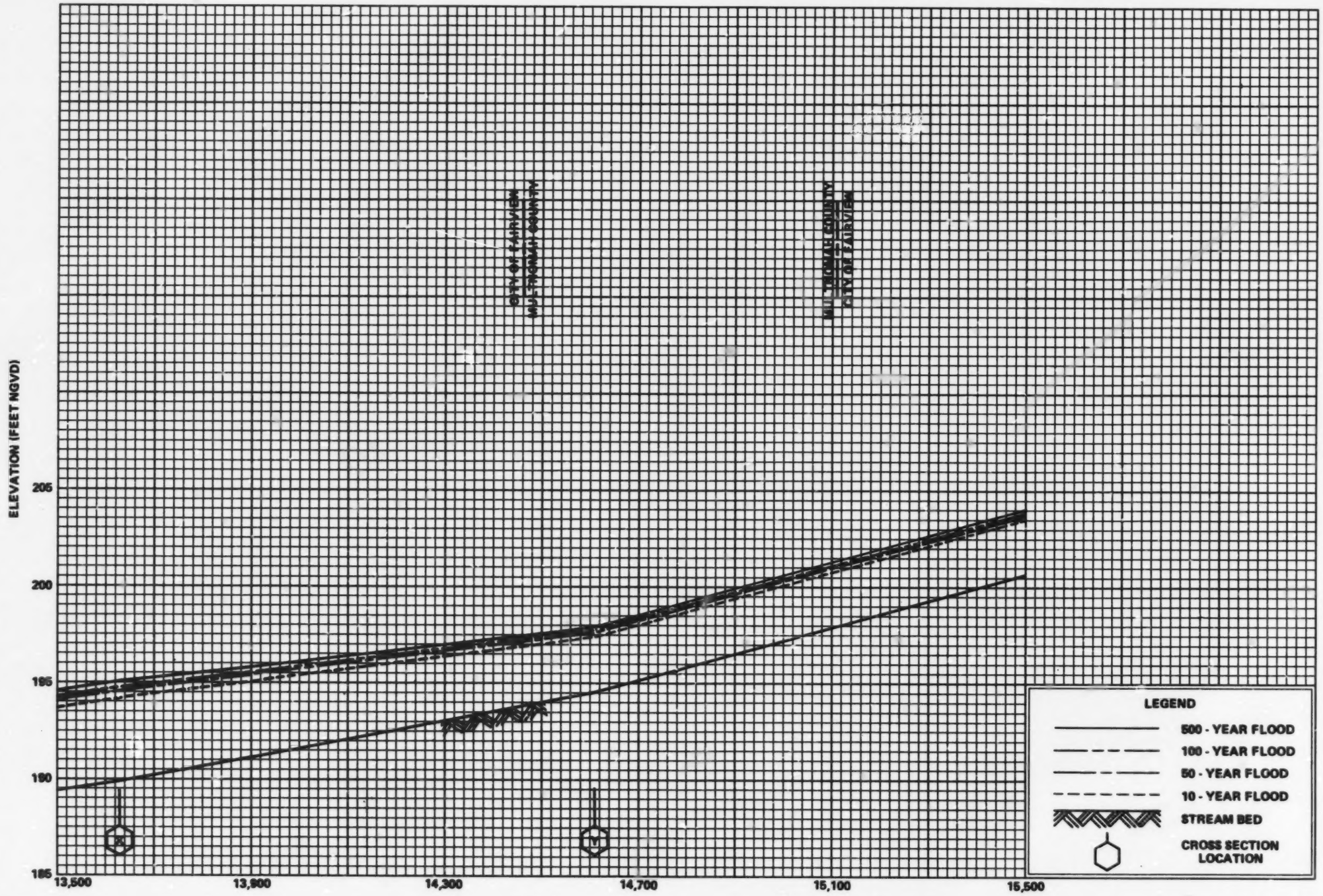

FLOOD PROFILES

FAIRVIEW CREEK

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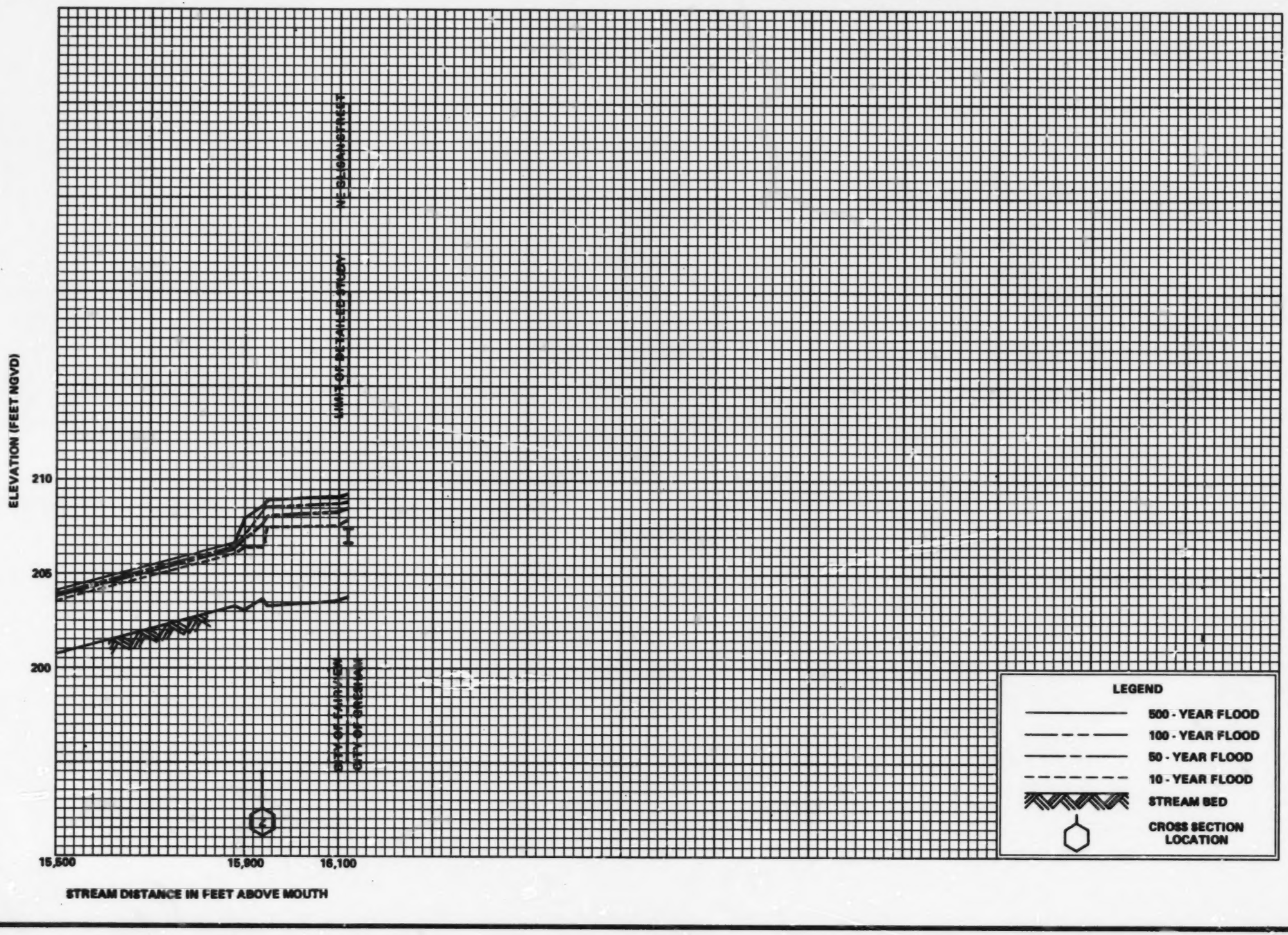

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